APPROVED
at the Chair meeting of 25.08.25, minute no.1,
Head of the Biochemistry and Clinical Biochemistry Chair,
MD, PhD., prof., Olga TAGADIUC _____

**PLAN OF THE THEORETICAL AND PRACTICAL CLASSES**
**IN BASICS OF MEDICAL BIOCHEMISTRY, FACULTY OF DENTISTRY, SECOND YEAR, 2025-2026 ACADEMIC YEAR, FALL SEMESTER**

| **Fall (3rd) semester, second year** | | | |
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| **Nr** | **Data** | **Theoretical classes** | **Practical lessons** |
| 1 | 01-05.09.25 | Lipids: structure, properties. Biologic role of lipids. Triglyceride metabolism. Metabolism of fatty acids. | Lipids: structure, properties, classification. The biological role of lipids. Digestion and absorption of lipids. Metabolism of reserve lipids. Oxidation of glycerol.<br>*Bile acids identification*. |
| 2 | 08-12.09.25 | | Metabolism of fatty acids. Beta-oxidation and biosynthesis of fatty acids. Biosynthesis and use of ketone bodies.<br>*Ketone bodies identification.* |
| 3 | 15-19.09.25 | Metabolism of ketone bodies. Metabolism of structural lipids (cholesterol). Metabolism of plasma lipoproteins – representatives, composition, biomedical role, metabolism. Regulation of lipid metabolism. | Metabolism of structural lipids: biosynthesis and catabolism of cholesterol, phospholipids. Metabolism of plasma lipoproteins - representatives, composition, biomedical role, metabolism. Regulation of lipid metabolism.<br>*Dosage of cholesterol. Determination of beta-lipoproteins.* |
| 4 | 22-26.09.25 | | **Concluding test 1 “Lipid Metabolism”** |
| 5 | 29.09-03.10.25 | General ways of amino acid metabolism (transamination and oxidative deamination of Glutamic acid). The final products of nitrogen metabolism. The mechanisms of ammonia detoxification. Ureagenesis. | Digestion and absorption of proteins. Putrefaction of amino acids in the intestine. General ways of amino acid metabolism (transamination and oxidative deamination of Glutamic acid).<br>*Gastric juice acidity assay*. |
| 6 | 06-10.10.25 | | Biosynthesis of non-essential amino acids. The use of carbon skeletons of amino acids. End products of nitrogen metabolism. Ammonia |

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| | | | detoxification mechanisms. Urea synthesis. Hyperammonemia and uraemia.<br>*Dosage of urea in urine.* |
| 7 | 13-17.10.25 | Metabolism of nucleoproteins (general notions). Metabolism of chromoproteins. | Metabolism of purine and pyrimidine nucleotides. Metabolism of chromoproteins. Hemoglobin biosynthesis: location, substrates, equations of the first two reactions, regulation of the process. Porphyrias (general notions). Hemoglobin catabolism. Bilirubin: formation, conjugation, biliary excretion, its metabolism in the intestine. Hyperbilirubinemia. The main types of jaundice (prehepatic, hepatic and posthepatic).<br>*Determination of uric acid in urine. Bilirubin assay in blood serum.* |
| 8 | 20-24.10.25 | | **Concluding test 2 "Metabolism of simple and conjugated proteins"** |
| 9 | 27-31.10.25 | Hormones – structure, classification and biological role. Regulation of hormone synthesis and secretion. Mechanisms of action. Proteic hormones (hormones that regulate the metabolism of calcium and phosphates; insulin; glucagon) and hormones that are amino acid derivatives (adrenaline): metabolic effects. | The biochemical mechanisms of genetic regulation – replication, transcription, translation. DNA replication in prokaryotes - template, substrates, enzymes and protein factors. Biochemical mechanism and stages of DNA biosynthesis. Transcription in prokaryotes – template, substrates, enzymes, biochemical mechanism. Protein biosynthesis in prokaryotes. Peculiarities of replication, transcription and translation in eukaryotes. *Quantitative determination of DNA and RNA.* |
| 10 | 03-07.11.25 | | Hormones – structure, classification and biological role. Regulation of hormone synthesis and secretion. Mechanisms of action. Proteic hormones (hormones that regulate the metabolism of calcium and phosphates; insulin; glucagon) and hormones that are amino acid derivatives (adrenaline): metabolic effects.<br>*Adrenaline identification.* |
| 11 | 10-14.11.25 | Hormones of steroid (glucocorticoids) and thyroid nature ($T_3$ and $T_4$) – regulation of synthesis and secretion. Metabolic effects. | Cytosolic - nuclear mechanism of hormones action of steroid and thyroid nature ($T_3$ and $T_4$). Regulation of synthesis and secretion. Effects of hormones: glucocorticoids; thyroid ($T_3$ and $T_4$).<br>*Identification of 17-ketosteroids in the urine. Dosage of calcium in blood serum.* |

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| 12 | 17-21.11.25 | | Blood. General composition. Chemical composition of blood plasma. Plasma proteins, blood enzymes, non-protein organic substances and mineral substances. |
| 13 | 24-28.11.25 | Blood. General composition. Chemical composition of blood plasma. Plasma proteins, blood enzymes and mineral substances. Biochemistry of saliva. | Biochemistry of saliva. |
| 14 | 01-05.12.25 | | **Concluding test 3 "Genetic and Hormonal Regulation of Metabolism" “Biochemistry of humours (blood and saliva)”** |
| 15 | 08-12.12.25 | Integration of metabolism. | Evaluation of students individual work |

Note:

- Tatiana Timercan, PhD, associate professor, is responsible for the theoretical classes at the Faculty of Dentistry.
- Duration of the theoretical class - 2 hours, practical lesson - 2 hours.